PEND OREILLE SHORES RESORT (PWSNO 1090098)
SOURCE WATER ASSESSMENT REPORT

December 4, 2002

State of Idaho
Department of Environmental Quality

SOURCE WATER ASSESSMENT FOR PEND OREILLE SHORES RESORT

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your drinking water source is based on well construction characteristics; site specific sensitivity factors associated with the aquifer the water is drawn from; a land use inventory inside the well recharge zone; and water quality history. For non-community transient water systems like Pend Oreille Shores Resort, recharge zones were generally delineated as a 1000-foot fixed radius around the wells.

This report, *Source Water Assessment for Pend Oreille Shores Resort* describes factors used to assess the susceptibility to contamination. The analysis relies on information from the well logs; an inventory of land use inside the delineation boundaries, well site characteristics, potential contaminant sites identified through a Geographic Information System database search; and information from the public water system file. The ground water susceptibility analysis worksheets for Pend Oreille Shores Resort are attached.

Taken into account with local knowledge and concerns, this assessment should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should <u>not</u> be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

<u>Well Construction.</u>

Pend Oreille Shores Resort is located adjacent to Highway 200 near East Hope, Idaho. Two wells serve the condominium complex. Well #2 was drilled in 1995 to a depth of 179 feet. The 8-inch casing, fitted with a watertight sanitary well cap, extends from 2 feet above ground to a gravel stratum 177 feet below the surface. The 20-foot deep surface seal terminates in sand and gravel. The surface seal does not meet current well construction standards (IDAPA 37.03.09). When clay beds are present, the annular seal must extend into the clay stratum, which in this case begins 78 feet below the surface. The static water level in Well #2 is 157 feet below ground. The estimated capacity of the well is 75 gpm.

Well #3 was drilled in May 2000 to replace Well #1which was abandoned because of low output and sediment in the water. Well #3 is 198 feet deep with a 50-foot deep surface seal that terminates in silty clay. The steel casing extends from two feet above ground to 186 feet below and penetrates a 10-foot clay lens. The well screen begins just below the clay lens and reaches a depth of 196 feet. The static water level in Well #3 is 20 feet below ground. An air test at the time of drilling produced 40 to 50 gpm over a two hour period. Both wells lie closer than 50 feet from the Pend Oreille Shores Resort Property line. The requirement for a 50-foot radius well lot was waived in 2000.

Well Site Characteristics.

Hydrologic sensitivity scores are derived from information on the well log and from the soil drainage classification inside the recharge zone delineated for your wells. Soils in the well recharge zones for the Pend Oreille Shores Resort wells are generally moderately well drained to well drained. Soils in these drainage classes provide little protection against migration of contaminants toward the well. At well #2, water was first encountered 158 feet below ground. 97 feet of gravel mixed with sand or clay and 61 feet of sandy clay lie over the water-bearing stratum. In Well #3, water was first encountered only 25 feet below ground in a sand, gravel and cobble stratum extending from the surface to 50 feet below.

Potential Contaminant Inventory.

The 1000-foot buffer zone delineated for the Pend Oreille Shores Resort well covers an area that includes a marina and commercial development with fuel storage tanks. Synthetic and volatile organic chemicals are the chief potential contaminants associated with these types of facilities. A rail line runs parallel to Highway 200. Accidents on major transportation corridors can be the source of any class of regulated contaminants. Well #2 is 19 feet from the highway right of way and Well #3 is 32 feet from it.

A sewer line about 36 feet from Well #2 encroaches on the sanitary setback for the well. The presence of a potential contaminant source this close to a well usually results in a high susceptibility ranking for the well. But because the 50-foot separation requirement was waived in 2001 the sewer line is counted as a potential source of microbial and inorganic chemical contaminants further from the well. An inspection of the system in April 2000 determined that the wells draw from ground water that is not directly influenced by surface water from Lake Pend Oreille or an ephemeral stream about 700 feet north of the wells.

Water Quality History.

Pend Oreille Shores Resort has had no water quality problems. In the period from January 1998 through the present quarterly tests for total coliform bacteria were all negative. No nitrates have been detected in required annual testing.

Susceptibility to Contamination.

An analysis of the Pend Oreille Shores Resort wells, incorporating information from the public water system file, well logs, and the potential contaminant inventory, ranked the wells moderately susceptible to all classes of regulated contaminants. Risk factors associated with local geology added the most points to the final susceptibility scores. The complete analysis worksheets for your wells are on pages 6 and 7 of this report. Formulas used to compute final scores and susceptibility rankings are at the bottom of page 7.

Source Water Protection.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Continuing to operate and maintain the wells in full compliance with Idaho Rules for Public Drinking Water Systems is the most important drinking water protection tool available to Pend Oreille Shores Resort. There are a number of voluntary measures the resort can implement as well. With the wells closer than is usually allowed to Highway 200, extra precautions to ensure that storm water runoff and any accidental highway spills drain away from the wells may be in order. The system should consider covering the well heads to protect them from collision damage and for additional security.

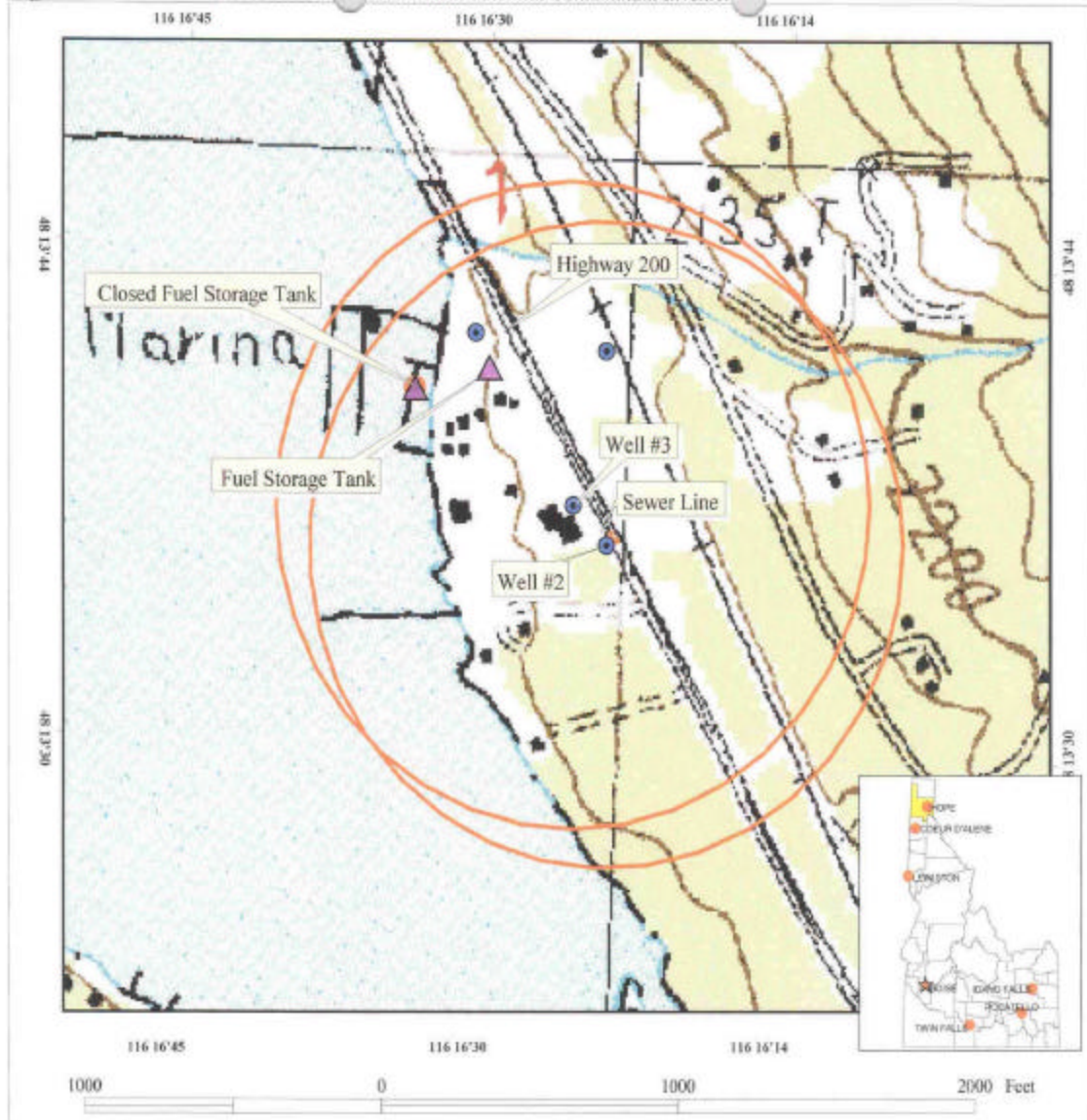
Every system should develop an emergency response plan. There is a simple fill-in-the-blanks form available on the DEQ website (http:// www.deq.state.id.us/water/water1.htm) to guide systems through the emergency planning process. Drinking water protection partnerships with businesses in the capture zone and neighboring landowners should also be established. Some of them may not be aware that their property is in a sensitive area where household, maintenance or business practices could have a negative impact on public drinking water supplies.

The resort should also investigate ground water stewardship programs like Home*A*Syst. These programs are designed to help well owners assess everyday activities for their potential impact on drinking water quality. Topics include petroleum product storage, handling and storing lawn and household chemicals and similar activities. Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.

Assistance. Public water suppliers and users may call the following IDEQ offices with questions about this assessment and to request help with drinking water protection planning.

Coeur d'Alene Regional DEQ Office	(208) 769-1422
State IDEQ Office	(208) 373-0502
Website:	http:// www.deq.state.id.us/water/water1.htm

Figure 1. Pend Oreille Shores Resort [illegible]neation and Potential Contaminant Inventor[illegible]



Legend

Wellhead	RICRIS Site	AST
Buildings	Business Mailing List	Recharge Point
Roads	Dairy	SARA Title III Site (EPCRA)
1000 Foot Buffer Zone	LUST Site	Injection Well
Mine	UST Site	Group1 Site
Enhanced Inventory	Closed	Cyanide Site
Toxic Release Inventory	Open	Landfill
CERCLIS Site	NPDES Site	Wastewater Land App Site

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

PWS # 1090098
Pend Oreille Shores Resort
Well #2 and Well #3

September 17, 2002

Ground Water Susceptibility

Public Water System Name : **PEND OREILLE SHORES RESORT HOMEOWNERS** **WELL #2**

Public Water System Number : **1090098** 9/18/02 11:40:25 AM

1. System Construction		SCORE			
Drill Date	1/30/95				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 2000				
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	CASING YES, SEAL NO	1			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		**3**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	GRAVEL	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score		**4**			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use		Score	Score	Score	Score
Land Use	RESIDENTIAL/COMMERCIAL	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	SETBACK WAIVED	YES	YES	YES	YES
Potential Contaminant Source/Land Use Score -		**1**	**1**	**1**	**1**
Potential Contaminant / Land Use - 1000-FOOT BUFFER					
Contaminant sources present (Number of Sources)	YES	2	2	2	3
(Score = # Sources X 2) 8 Points Maximum		4	4	4	6
Sources of Class II or III leacheable contaminants or Microbials	YES	2	2	2	
4 Points Maximum		2	2	2	
1000-Foot Buffer contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use 1000-Foot Buffer	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - 1000-Foot Buffer		**6**	**6**	**6**	**6**
Cumulative Potential Contaminant / Land Use Score		**7**	**7**	**7**	**7**
4. Final Susceptibility Source Score		**9**	**9**	**9**	**10**
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility

Public Water System Name : **PEND OREILLE SHORES RESORT HOMEOWNERS** **WELL #3**

Public Water System Number : **1090098** 9/18/02 11:40:12 AM

1. System Construction		SCORE			
Drill Date	5/17/00				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 2000				
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		**0**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	GRAVEL	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		**6**			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use		Score	Score	Score	Score
Land Use	RESIDENTIAL/COMMERCIAL	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	SETBACK WAIVED	YES	YES	YES	YES
Potential Contaminant Source/Land Use Score		**1**	**1**	**1**	**1**
Potential Contaminant / Land Use - 1000-FOOT BUFFER					
Contaminant sources present (Number of Sources)	YES	2	2	2	3
(Score = # Sources X 2) 8 Points Maximum		4	4	4	6
Sources of Class II or III leacheable contaminants or Microbials	YES	2	2	2	
4 Points Maximum		2	2	2	
1000-Foot Buffer contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use 1000-Foot Buffer	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - 1000-Foot Buffer		**6**	**6**	**6**	**6**
Cumulative Potential Contaminant / Land Use Score		**7**	**7**	**7**	**7**
4. Final Susceptibility Source Score		**8**	**8**	**8**	**9**
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Ranking:

0 - 5 Low Susceptibility
6 - 12 Moderate Susceptibility
> 13 High Susceptibility

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ? Superfund? is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.